

Pf-2727/nec/us/mh

What is claimed is :

1. A method of processing at least a nanotube, comprising the steps of :
 - 5 causing a selective solid state reaction between a selected part of a nanotube and a reactive substance to have said selected part only become a reaction product ; and
separating said nanotube from said reaction product to define an end of said nanotube.
- 10 2. The method as claimed in claim 1, wherein said step of causing a selective solid-state reaction further comprises the steps of :
 - selectively contacting said part of said nanotube with said reactive substance ; and
 - 15 causing said selective solid state reaction on a contacting region of said selected part of said nanotube and said reactive substance to have said selected part only become said reaction product,
wherein a boundary between said reaction product and said nanotube is self-aligned to an edge portion of said contacting region of said
20 selected part of said nanotube and said reactive substance.
3. The method as claimed in claim 2, wherein said solid state reaction is caused by heating said reactive substance.

Pf-2727/nec/us/mh

4. The method as claimed in claim 3, wherein said reactive substance is heated by an irradiation of a heat ray onto said reactive substance.
- 5 5. The method as claimed in claim 4, wherein said heat ray is an infrared ray.
6. The method as claimed in claim 3, wherein said reactive substance is heated by applying a current between said reactive substance and said nanotube.
- 10 and said nanotube.
7. The method as claimed in claim 2, wherein said step of contacting said part of said nanotube with said reactive substance further comprises the steps of :
- 15 dispersing said nanotube into an organic solvent to form a dispersion liquid ;
- applying said dispersion liquid onto a surface of said reactive substance ; and
- evaporating said organic solvent from said dispersion liquid to
- 20 leave said nanotube on said reactive substance.
8. The method as claimed in claim 3, wherein said nanotube is separated from said reaction product by rapidly cooling said reaction product.

Pf-2727/nec/us/mh

9. The method as claimed in claim 1, wherein said nanotube is a single-layer winded nanotube.
- 5 10. The method as claimed in claim 1, wherein said nanotube is a multi-layer winded nanotube.
11. The method as claimed in claim 1, wherein said nanotube is a carbon nanotube.
- 10 12. The method as claimed in claim 1, wherein said nanotube is a boron nitride based nanotube.
13. The method as claimed in claim 1, wherein said reactive
15 substance is a metal.
14. The method as claimed in claim 13, wherein said reactive substance is Nb.
- 20 15. The method as claimed in claim 1, wherein said reactive substance is a semiconductor.
16. The method as claimed in claim 15, wherein said reactive substance is Si.

Pf-2727/nec/us/mh

17. The method as claimed in claim 11, wherein said reactive substance is in a solid state.
- 5 18. The method as claimed in claim 17, wherein said reactive substance comprises a substrate having an edge.
19. The method as claimed in claim 18, wherein said edge is defined by a hole formed in said substrate.
- 10 20. The method as claimed in claim 1, wherein said end of said nanotube is a top of said nanotube.
21. A method of forming a top of a carbon nanotube, comprising the
- 15 steps of :
- selectively contacting a selected part of a nanotube with a solid state reactive substance having an edge ;
- carrying out a heat treatment to said solid state reactive substance to cause a selective solid state reaction on a contacting region of said
- 20 selected part of said nanotube and said solid state reactive substance to have said selected part only become a reaction product, wherein a boundary between said reaction product and said nanotube is self-aligned to said edge of said solid state reactive substance ; and
- separating said nanotube from said reaction product to define a

Pf-2727/ncc/us/mh

top of said nanotube.

22. The method as claimed in claim 21, wherein said solid state
reactive substance is heated by an irradiation of a heat ray onto said solid
5 state reactive substance.

23. The method as claimed in claim 22, wherein said heat ray is an
infrared ray.

10 24. The method as claimed in claim 21, wherein said solid state
reactive substance is heated by applying a current between said solid state
reactive substance and said nanotube.

25. The method as claimed in claim 21, wherein said step of
15 contacting said selected part of said nanotube with said reactive substance
further comprises the steps of :

dispersing said nanotube into an organic solvent to form a
dispersion liquid ;

20 applying said dispersion liquid onto a surface of said solid state
reactive substance ; and

evaporating said organic solvent from said dispersion liquid to
leave said nanotube on said solid state reactive substance.

26. The method as claimed in claim 21, wherein said nanotube is

Pf-2727/nec/us/mh

separated from said reaction product by rapidly cooling said reaction product.

27. The method as claimed in claim 21, wherein said nanotube is a
5 single-layer winded nanotube.

28. The method as claimed in claim 21, wherein said nanotube is a
multi-layer winded nanotube.

10 29. The method as claimed in claim 21, wherein said nanotube is a
carbon nanotube.

30. The method as claimed in claim 21, wherein said nanotube is a
boron nitride based nanotube.

15 31. The method as claimed in claim 21, wherein said solid state
reactive substance is a metal.

32. The method as claimed in claim 31, wherein said solid state
20 reactive substance is Nb.

33. The method as claimed in claim 21, wherein said solid state
reactive substance is a semiconductor.

Pf-2727/nec/us/mh

34. The method as claimed in claim 33, wherein said solid state reactive substance is Si.